

CLAIMS:

1. A method for encoding a stream of bits of a signal relating to a binary source into a stream of bits of a signal relating to a binary channel, the binary source comprising a main source and a secondary source, the main source being encoded in a main channel and the secondary source being encoded in a secondary channel, the secondary channel being
5 embedded in the main channel in order to form the binary channel, characterized in that the binary channel is divided in blocks, each block comprising a number of user bits and that in at least one of the blocks the secondary channel also is used for encoding non-user bits.
2. Method according to claim 1, wherein the secondary channel is embedded in
10 the main channel by multi-level coding.
3. Method according to claim 2, wherein level coding is applied only to runlengths I_{nmin} or greater, wherein n_{min} is a predetermined integer.
- 15 4. Method according to claim 1, wherein merging bit coding is applied to embed the secondary channel in the main channel.
5. Method according to claims 2 or 3, wherein one non-user bit per block is encoded by giving all runlengths I_{nmin} or greater that are not used for the encoding of the
20 secondary channel one predetermined value, depending on the value of the non-user bit.
6. Method according to claims 2 or 3, wherein all runlengths with I_{nmin} that are not used for the encoding of the secondary channel are given alternatively a first binary value and a second binary value when a first value of the non-user bit has to be encoded and are
25 given alternatively the second binary value and the first binary value when a second value of the non-user bit has to be encoded.

7. Method according to claims 2 or 3, wherein the ratio of the number of LML bits of a block with respect to the number of bits in the primary channel of that block is varied, for encoding non-user bits.

5 8. Method according to claim 7, wherein the number of LML bits is arranged by selecting a scrambler for the primary channel bits.

9. Method according to claim 7 or 8, wherein at least two different ratios are used, when the ratio in a block has a first value a first binary value is encoded and when the
10 ratio has a second value a second binary value is encoded.

10. Method according to claim 9, wherein more than two different ratios or ranges of ratios are used to encode non-user bits.

15 11. An encoder comprising an input for receiving a stream of bits of a signal relating to a binary source and an output for providing a stream of bits of a signal relating to a binary channel, the binary source comprising a main source and a secondary source, the encoder comprising means for encoding the main source in a main channel, means for encoding the secondary source in a secondary channel, and means for embedding the
20 secondary channel in the main channel in order to form the binary channel, wherein means are provided to divide the binary channel in blocks, each block comprising a number of user bits and wherein in at least one of the blocks the secondary channel also non-user bits are encoded.

25 12. Encoder according to claim 11, wherein the means for embedding apply multi-level coding.

13. Encoder according to claim 11, wherein the means for embedding apply merging bit coding.

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14. Method for decoding a stream of bits of a signal relating to a binary channel into a stream of bits of a signal relating to a binary source, the binary channel comprising a main channel and a secondary channel, the secondary channel being embedded in the main channel, and a stream of corrected bits of the binary channel relating to the main channel

being used for correcting errors in the stream of bits of the binary channel relating to the secondary channel, wherein the stream of bits of the signal relating to the binary channel is encoded in accordance with the method of any of the claims 1-10.

5 15. A device for decoding a stream of bits of a signal relating to a binary channel into a stream of bits of a signal relating to a binary source, which device comprises decoding means conceived to decode a main channel, the decoding means being also conceived to
10 decode a secondary channel, the secondary channel being embedded in the main channel, and to correct errors in the stream of bits of the binary channel relating to the secondary channel using a stream of corrected bits of the binary channel relating to the main channel, wherein
said decoding means further are conceived to decode non-user bits in the secondary channel.

15 16. A device according to claim 15, wherein the device further comprises reading means for reading out an information carrier to obtain the stream of bits of the binary channel signal.

20 17. A record carrier of the optical readable type in which information has been recorded as a pattern of optically detectable marks representing a binary channel arranged along a track, wherein the detectable marks comprise main channel bits and secondary channel bits, which are embedded in the main channel bits, the main channel bits and the
secondary channel bits forming a binary channel, wherein the binary channel is divided in blocks, each block comprising a number of user bits and wherein in at least one of the blocks
the secondary channel bits comprise non-user bits.

25 18. A record carrier according to claim 17, wherein the secondary channel bits are embedded in the main channel bits by means of multi-level coding.

19. A record carrier according to claim 18, wherein the multi-level coding is applied only to runlengths $I_{n-\min}$ or greater, wherein $n-\min$ is a predetermined integer.

30 20. A record carrier according to claim 17, wherein the secondary channel bits are embedded in the main channel bits by means of merging bit coding.